Description

Title: Digital display method and system, digital display device and digital display server

Technical field

[0001] This description relates to digital display methods and systems, digital display devices, and digital display servers.

Background

[0002] Digital display methods are known which allow the deployment of playlists and of content to digital display devices. WO2005/015362 relates to an example of such method.

Summary

[0002a] In an aspect, the present disclosure refers to a digital display method for controlling the display of digital content items by digital display devices, comprising:

a) generating, by at least one server, playlists based on display campaigns, each playlist being intended to be read by one or more of said digital display devices, each playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;

b) generating, for each digital display device, by said at least one server, a download manifest comprising at least loading addresses of digital content items;

c) updating the playlists and download manifests by the digital display devices, comprising:

c1) polling said at least one server, at predetermined intervals, by each digital display device, in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to said digital display device;

c2) if yes, loading said new playlist and/or said new download manifest on the digital display device;

c3) if a new download manifest has been loaded from the server, determining, by said digital display device, what new digital content item(s) are referenced in said download manifest;

c4) and downloading, by said digital display device, said new digital content item(s) from the address(es) indicated in the new download manifest;

d) reading, by each digital display device, the digital content items corresponding to a playlist in effect for this digital display device and displaying these digital content items on a digital screen belonging to said digital display device.

[0002b] In another aspect, the present disclosure refers to a digital display system comprising at least one server and multiple digital display devices, wherein:

- said at least one server is adapted to generating playlists based on display campaigns, each playlist being intended to be read by one or more of said digital display devices, each playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;

- said at least one server is adapted to generating repetitively, for each digital display device, a download manifest comprising at least loading addresses of digital content items;

- the digital display devices are adapted to updating their playlists and download manifests, this updating comprising:

c1) polling said at least one server, at predetermined intervals, by each digital display device, in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to said digital display device;

c2) if yes, loading said new playlist and/or said new download manifest on the digital display device;

c3) if a new download manifest has been loaded from the server, determining, by said digital display device, what new digital content item(s) are referenced in said download manifest;

c4) and downloading, by said digital display device, said new digital content item(s) from the address(es) indicated in the new download manifest;

- each digital display device is adapted to reading the digital content items corresponding to a playlist in effect for this digital display device and for displaying these digital content items on a digital screen belonging to said digital display device.

[0002c] In another aspect, the present disclosure refers to a digital display device comprising a digital screen and having in memory at least:

- a playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;

- a download manifest comprising at least loading addresses of digital content items;

said digital display device being adapted to:

- updating its playlist and download manifest, this updating comprising:

c1) polling at least one server, at predetermined intervals, in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to said digital display device;

c2) if yes, loading said new playlist and/or said new download manifest on the digital display device;

c3) if a new download manifest has been loaded, determining, by said digital display device, what new digital content item(s) are referenced in said download manifest;

c4) and downloading, by said digital display device, said new digital content item(s) from the address(es) indicated in the new download manifest;

- reading the digital content items corresponding to the playlist and displaying these digital content items on said digital screen.

[0002d] In another aspect, the present disclosure refers to a digital display server adapted to:

- generating playlists based on display campaigns, each playlist being intended to be read by one or more of said digital display devices, each playlist comprising at least one series of identifiers of digital content items to be read but not comprising

loading addresses of digital content items or digital fingerprints of digital content items;

- repetitively generating, for each digital display device, a download manifest comprising at least loading addresses of digital content items;

- allow the digital display devices to update their playlists and download manifests, this updating comprising: polling said server at predetermined intervals in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to each digital display device, and if yes, allowing said digital display device to load said new playlist and/or said new download manifest.

[0003] The aim of this description is in particular to improve the efficiency of these methods.

[0004] To this end, in an example, this description proposes a digital display method for controlling the display of digital content items by digital display devices, comprising:

a) generating, by at least one server, playlists based on display campaigns, each playlist being intended to be read by one or more of said digital display devices, each playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;

b) generating, for each digital display device, by said at least one server, a download manifest comprising at least loading addresses of digital content items;

c) updating the playlists and download manifests by the digital display devices, comprising:

c1) polling said at least one server, at predetermined intervals, by each digital display device, in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to said digital display device;

c2) if yes, loading said new playlist and/or said new download manifest on the digital display device;

c3) if a new download manifest has been loaded from the server, determining, by said digital display device, what new digital content item(s) are referenced in said download manifest;

c4) and downloading, by said digital display device, said new digital content item(s) from the address(es) indicated in the new download manifest;

d) reading, by each digital display device, the digital content items corresponding to a playlist in effect for this digital display device and displaying these digital content items on a digital screen belonging to said digital display device.

[0005] By means of these provisions, the proposed digital display method is particularly efficient and economical in bandwidth. In fact, it requires transmitting from the server to the digital display devices only distribution lists and download manifests which are small in volume, and only when these have been modified. In addition, part of the modifications to playlists do not result in any modification in the download manifest (in particular when the modifications concern the read order or the read frequency of content already present in the previous download manifest, according to dynamic modifications of the display campaigns), which eliminates some sending of the download manifests, which are larger than the playlists.

[0006] In various ~~embodiments~~ examples of the digital display method, recourse may optionally also be made to one or more of the following provisions (alone or in any combination, possibly independently of the aforementioned provisions):

[0007] Each playlist and each download manifest is loaded in an encrypted manner by the digital display devices, which improves the security of the method;

[0008] Each download manifest comprises at least one reference digital fingerprint for each digital content item referenced in said download manifest, and during step c4), the digital display device determines a digital fingerprint calculated from the downloaded new digital content item, verifies that the calculated digital fingerprint matches the reference digital fingerprint, and validates the downloaded digital content item only if the calculated digital fingerprint matches the reference digital fingerprint, which improves the security of the method;

[0009] In step c4), the digital display device downloads the new digital content item in an unencrypted manner;

[0010] In step c4), the digital display device downloads the new digital content item through a proxy server which is in a local area network with said display device and with other digital display devices, which improves performance in downloading digital content;

[0011] In step c4), the digital display device downloads the new digital content item in chunks, which improves performance in downloading digital content items;

[0012] In step c1), each digital display device polls said at least one server at a predetermined address specific to said digital display device, which improves the security of the method;

[0013] Each digital display device communicates with said at least one server and downloads new content items via a mobile telephone network.

[0014] Furthermore, in an example, this description also relates to a digital display system comprising at least one server and multiple digital display devices, wherein:
said at least one server is adapted to generating playlists based on display campaigns, each playlist being intended to be read by one or more of said digital display devices, each playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;
- said at least one server is adapted to generating, for each digital display device, a download manifest comprising at least loading addresses of digital content items;
- the digital display devices are adapted to updating their playlists and download manifests, this updating comprising:
c1) polling said at least one server, at predetermined intervals, by each digital display device, in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to said digital display device;
c2) if yes, loading said new playlist and/or said new download manifest on the digital display device;
c3) if a new download manifest has been loaded from the server, determining, by said digital display device, what new digital content item(s) are referenced in said download manifest;
c4) and downloading, by said digital display device, said new digital content item(s) from the address(es) indicated in the new download manifest;

- each digital display device is adapted to reading the digital content items corresponding to a playlist in effect for this digital display device and for displaying these digital content items on a digital screen belonging to said digital display device.

[0015] In various ~~embodiments~~ examples of the digital display system, recourse may optionally be made to one or more of the following provisions (alone or in any combination, possibly independently of the aforementioned provisions):

[0016] The digital display devices are adapted to loading each playlist and each download manifest in an encrypted manner;

[0017] Each download manifest comprises at least one reference digital fingerprint for each digital content item referenced in said download manifest, and during the downloading of each new digital content item, the digital display device is adapted to determining a digital fingerprint calculated from the downloaded new digital content item, verifying that the calculated digital fingerprint matches the reference digital fingerprint, and validating the downloaded digital content item only if the calculated digital fingerprint matches the reference digital fingerprint;

[0018] The digital display device is adapted to downloading the new digital content items in an unencrypted manner;

[0019] Several of the digital display devices belong to a local area network also comprising a proxy server, and each digital display device in the local area network is adapted to downloading the new digital content items through said proxy server;

[0020] Each digital display device is adapted to downloading new digital content items in chunks;

[0021] Each digital display device is adapted to polling said at least one server at a predetermined address specific to said digital display device;

[0022] Each digital display device is adapted to communicating with said at least one server and for downloading new content items via a mobile telephone network.

[0023] Furthermore, in an example, this description also relates to a digital display device comprising a digital screen and having in memory at least:

- a playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;

- a download manifest comprising at least loading addresses of digital content items;

said digital display device being adapted to:

- updating its playlist and download manifest, this updating comprising:

c1) polling at least one server, at predetermined intervals, in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to said digital display device;

c2) if yes, loading said new playlist and/or said new download manifest on the digital display device;

c3) if a new download manifest has been loaded, determining, by said digital display device, what new digital content item(s) are referenced in said download manifest;

c4) and downloading, by said digital display device, said new digital content item(s) from the address(es) indicated in the new download manifest;

- reading the digital content items corresponding to the playlist and displaying these digital content items on said digital screen.

[0024] In various ~~embodiments~~ examples of the digital display device, recourse may optionally be made to one or more of the following provisions (alone or in any combination, possibly independently of the aforementioned provisions):

[0025] The digital display device is adapted to loading each playlist and each download manifest in an encrypted manner;

[0026] Each download manifest comprises at least one reference digital fingerprint for each digital content item referenced in said download manifest, and during the downloading of each new digital content item, the digital display device is adapted to determining a digital fingerprint calculated from the downloaded new digital content item, verifying that the calculated digital fingerprint matches the reference digital fingerprint, and validating the downloaded digital content item only if the calculated digital fingerprint matches the reference digital fingerprint;

[0027] The digital display device is adapted to downloading the new digital content items in an unencrypted manner;

[0028] The digital display device belongs to a local area network which also comprises a proxy server and several other digital display devices, and said digital display device is adapted to downloading the new digital content items through said proxy server;

[0029] The digital display device is adapted to downloading new digital content items in chunks;

[0030] The digital display device is adapted to polling said at least one server at a predetermined address.

[0031] The digital display device is adapted to communicating with said at least one server and for downloading new content items via a mobile telephone network.

[0032] Finally, in an example, this description also relates to a digital display server adapted to:

- generating playlists based on display campaigns, each playlist being intended to be read by one or more of said digital display devices, each playlist comprising at least one series of identifiers of digital content items to be read but not comprising loading addresses of digital content items or digital fingerprints of digital content items;
- generating, for each digital display device, a download manifest comprising at least loading addresses of digital content items;
- allowing the digital display devices to update their playlists and download manifests, this updating comprising: polling said server at predetermined intervals in order to determine whether said at least one server has a new playlist and/or a new download manifest corresponding to each digital display device and if yes, allowing said digital display device to load said new playlist and/or said new download manifest.

[0033] In various ~~embodiments~~ examples of the digital display device, recourse may optionally be made to one or more of the following provisions (alone or in any combination, possibly independently of the aforementioned provisions):

[0034] The digital display server is adapted to allowing the digital display devices to load each playlist and each download manifest in an encrypted manner;

[0035] Each download manifest comprises at least one reference digital fingerprint for each digital content item referenced in said download manifest;